SEQUENCE LISTING

<110> E. I. DU PONT DE NEMOURS AND COMPANY

<120> PLANT 1-DEOXY-D-XYLULOSE 5-PHOSPHATE REDUCTOISOMERASE

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<150> 60/110,865
<151> 1998-DECEMBER-04

<160> 22

<170> Microsoft Office 97

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Ser Thr Gly Ser Ile Gly Thr Gln Xaa Leu Asp Ile Val Ala Glu Asn
20 25 30

Pro Asp Lys Phe Arg Val Val Ala Leu Ala Ala Gly Ser Asn Val Thr
35 40 45

Leu Leu Ala Asp Gln Val Lys Thr Phe Xaa Pro Lys Leu Val Arg
50 55 60

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<213> Zea mays

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cgctgctaat gagaaggccg tggagttgtt cattgacgag aagattagct acctggacat 720
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<213> Zea mays

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<400> 4

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Asp Glu Leu Lys Glu Ala Leu Ala Asp Cys Glu Glu Lys Pro Glu Ile
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Ile Pro Gly Glu Gln Gly Val Ile Glu Val Ala Arg His Pro Asp Ala
             20                  25                  30

Val Thr Val Val Thr Gly Ile Val Gly Cys Ala Gly Leu Lys Pro Thr
         35                  40                  45

Val Ala Ala Ile Glu Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu
     50                  55                  60

Thr Leu Ile Ala Gly Gly Pro Phe Val Leu Pro Leu Ala His Lys His
 65                  70                  75                  80

Lys Val Lys Ile Leu Pro Ala Asp Ser Glu His Ser Ala Ile Phe Gln
                 85                  90                  95

Cys Ile Gln Gly Leu Ser Glu Gly Ala Leu Arg Arg Ile Ile Leu Thr
            100                 105                 110

Ala Ser Xaa Gly Ala Phe Xaa Asp Trp Pro Xaa Asp Arg Leu Lys Asp
        115                 120                 125

Val Lys Val Ala Asp Ala Leu Lys His Pro Asn Trp Asn Met Gly Arg
    130                 135                 140

Lys Ile Thr Val Asp Ser Ala Thr Leu Phe Asn Lys Gly Leu Glu Val
145                 150                 155                 160

Ile Glu Ala His Tyr Leu Phe Gly Ala Glu Tyr Asp Asp Ile Glu Ile
                165                 170                 175

Val Ile His Pro Gln Ser Ile Ile His Ser Met Val Glu Thr Gln Asp
            180                 185                 190

Ser Ser Val Leu Ala Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile
        195                 200                 205

Leu Tyr Thr Leu Ser Trp Pro Asp Arg
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<212> DNA
<213> Oryza sativa

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ctctatgatt gaaacccagg attcatctgt gttggctcaa ctgggatggc cagatatgcg 1200
gataccaacc ttatacacca tgtcttggcc agacagaatc tattgctcag aggtcacctg 1260
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ggacatcttc aaggtggtgg agctgacatg cgacgctcat cggaatgagc tagtaacaag 1500
gccatcactg gaggagatca tacattatga tctgtgggcg agggagtatg ctgccagcct 1560
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<212> PRT
<213> Oryza sativa

<400> 6
Met Ala Leu Lys Val Val Ser Phe Pro Gly Asp Leu Ala Ala Val Ser
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Phe Leu Asp Ser Asn Arg Gly Gly Ala Phe Asn Gln Leu Lys Val Asp
20 25 30

Leu Pro Phe Gln Thr Arg Asp Arg Arg Ala Val Ser Leu Arg Arg Thr
35 40 45

Cys Cys Ser Met Gln Gln Ala Pro Pro Pro Ala Trp Pro Gly Arg Ala
50 55 60

Val Val Glu Pro Gly Arg Arg Ser Trp Asp Gly Pro Lys Pro Ile Ser
65 70 75 80

Ile Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Asp Ile Val
85 90 95

Ala Glu Asn Pro Asp Lys Phe Arg Val Val Ala Leu Ala Ala Gly Ser
100 105 110

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Asn Val Thr Leu Leu Ala Asp Gln Val Lys Thr Phe Lys Pro Lys Leu
        115                 120                 125

Val Ala Val Arg Asn Glu Ser Leu Val Asp Glu Leu Lys Glu Ala Leu
    130                 135                 140

Ala Asp Cys Asp Trp Lys Pro Glu Ile Ile Pro Gly Glu Gln Gly Val
145                 150                 155                 160

Ile Glu Val Ala Arg His Pro Asp Ala Val Thr Val Val Thr Gly Ile
                165                 170                 175

Val Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu Ala Gly
            180                 185                 190

Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile Ala Gly Gly Pro
        195                 200                 205

Phe Val Leu Pro Leu Ala Gln Lys His Lys Val Lys Ile Leu Pro Ala
    210                 215                 220

Asp Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln Gly Leu Pro Glu
225                 230                 235                 240

Gly Ala Leu Arg Arg Ile Ile Leu Thr Ala Ser Gly Gly Ala Phe Arg
                245                 250                 255

Asp Trp Pro Val Asp Lys Leu Lys Glu Val Lys Val Ala Asp Ala Leu
            260                 265                 270

Lys His Pro Asn Trp Asn Met Gly Lys Lys Ile Thr Val Asp Ser Ala
        275                 280                 285

Thr Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala His Tyr Leu Phe
    290                 295                 300

Gly Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His Pro Gln Ser Ile
305                 310                 315                 320

Ile His Ser Met Ile Glu Thr Gln Asp Ser Ser Val Leu Ala Gln Leu
                325                 330                 335

Gly Trp Pro Asp Met Arg Ile Pro Thr Leu Tyr Thr Met Ser Trp Pro
            340                 345                 350

Asp Arg Ile Tyr Cys Ser Glu Val Thr Trp Pro Arg Leu Asp Leu Cys
        355                 360                 365

Lys Leu Gly Ser Leu Thr Phe Lys Ala Pro Asp Asn Val Lys Tyr Pro
    370                 375                 380

Ser Met Asp Leu Ala Tyr Ala Ala Gly Arg Ala Gly Gly Thr Met Thr
385                 390                 395                 400

Gly Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu Leu Phe Ile Asp
                405                 410                 415

Glu Lys Ile Gly Tyr Leu Asp Ile Phe Lys Val Val Glu Leu Thr Cys
            420                 425                 430
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Asp Ala His Arg Asn Glu Leu Val Thr Arg Pro Ser Leu Glu Glu Ile
435 440 445

Ile His Tyr Asp Leu Trp Ala Arg Glu Tyr Ala Ala Ser Leu Gln Pro
450 455 460

Ser Thr Gly Leu Ser Pro Val Pro Val
465 470

<210> 7
<211> 1592
<212> DNA
<213> Glycine max

<220>
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<222> (993)

<220>
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agtgacacaa cagtagagag acgagtttat tgctctgccg ctgctcaatc accaccacca 180
gcatggccag gaacagctat tcccgagcct tctgatttca agacatggga tgggcaaaaa 240
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gccaacaaag agacaatgat tgcgggagcc ccttttgttc ttcctcttgc tcacaaacat 660
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gaattagtag catctccgtc actcgaagaa attattcact atgaccaatg ggctcgacaa 1380
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agggtttcaa taaaagttct agcttcaaga aa 1592

<210> 8
<211> 499
<212> PRT
<213> Glycine max

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<222> (325)

<220>
<221> UNSURE
<222> (462)

<400> 8

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Ser Ser Asn Asn Ser Thr Lys Leu Pro Gly Ser Phe Ser Leu Lys Arg
            20                  25                  30

Lys Asp Ser Asp Thr Thr Val Glu Arg Arg Val Tyr Cys Ser Ala Ala
        35                  40                  45

Ala Gln Ser Pro Pro Pro Ala Trp Pro Gly Thr Ala Ile Pro Glu Pro
    50                  55                  60

Ser Asp Phe Lys Thr Trp Asp Gly Gln Lys Pro Ile Ser Val Leu Gly
65                  70                  75                  80

Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Ser Ile Val Ala Glu Phe
                85                  90                  95

Pro Glu Arg Phe Lys Val Val Ser Leu Ala Ala Gly Ser Asn Ile Thr
            100                 105                 110

Leu Leu Ala Asp Gln Ile Lys Thr Phe Lys Pro Glu Val Val Gly Leu
        115                 120                 125

Arg Asn Glu Ser Leu Ile Asp Glu Leu Lys Glu Ala Leu Ala Asp Val
    130                 135                 140

Asp His Lys Pro Glu Ile Ile Pro Gly Glu Gln Gly Val Ile Glu Ala
145                 150                 155                 160

Ala Arg His Pro Asp Ala Thr Thr Val Val Thr Gly Ile Val Gly Cys
                165                 170                 175

Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu Ala Gly Lys Asp Ile
            180                 185                 190

Ala Leu Ala Asn Lys Glu Thr Met Ile Ala Gly Ala Pro Phe Val Leu
        195                 200                 205

Pro Leu Ala His Lys His Asn Ile Lys Ile Leu Pro Ala Asp Ser Glu
    210                 215                 220

His Ser Ala Ile Phe Gln Ser Ile Gln Gly Leu Pro Lys Gly Ala Leu
225                 230                 235                 240

Arg Lys Ile Leu Leu Thr Gly Ser Gly Gly Ala Phe Arg Glu Trp Pro
                245                 250                 255

Ala Glu Lys Met Lys Asp Ile Lys Leu Ala Asp Ala Leu Lys His Pro
            260                 265                 270

Ile Trp Ser Leu Gly Arg Lys Ile Thr Ile Asp Ser Ala Thr Leu Phe
        275                 280                 285
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Asn Lys Gly Leu Glu Val Ile Glu Ala His Tyr Leu Phe Gly Ala Ser
    290                 295                 300

Tyr Asp Asp Ile Glu Ile Val Ile His Pro Gln Ser Ile Ile His Ser
305                 310                 315                 320

Leu Val Glu Thr Xaa Asp Ser Ser Val Asn Ala Gln Leu Gly Ile Pro
                325                 330                 335

Asp Met Arg Leu Pro Leu Leu Tyr Thr Leu Ser Trp Pro Glu Arg Ile
            340                 345                 350

Tyr Cys Ser Glu Val Thr Trp Pro Arg Leu Asp Leu Ser Lys Tyr Gly
        355                 360                 365

Ser Leu Thr Phe Tyr Ala Pro Asp Asp Lys Lys Phe Pro Ser Val Asn
    370                 375                 380

Leu Cys Tyr Ala Ala Gly Arg Ala Gly Gly Thr Met Thr Gly Val Leu
385                 390                 395                 400

Ser Ala Ala Asn Glu Lys Ala Val Glu Met Phe Val Glu Glu Lys Ile
                405                 410                 415

Ser Tyr Leu Asp Ile Phe Lys Val Val Glu Leu Thr Cys Gln Glu His
            420                 425                 430

Gln Lys Glu Leu Val Ala Ser Pro Ser Leu Glu Glu Ile Ile His Tyr
        435                 440                 445

Asp Gln Trp Ala Arg Gln Tyr Ala Ala Ser Leu Gln Lys Xaa Phe Lys
    450                 455                 460

Cys Leu Asn Pro Ile Phe Leu Thr Tyr Phe Arg Ser Trp Gly Cys Gly
465                 470                 475                 480

Gly Leu Leu Ala Thr Ala Ser Ile Phe Cys Lys Cys Ile Val Gly Ser
                485                 490                 495

Ser Ile Leu
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<210> 9
<211> 784
<212> DNA
<213> Glycine max

<220>
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actggttcaa ttggaactca gacactagat attgtggcag agaatccaga taagtttaaa 180
gttgtggcac ttgcagctgg ttcaaatgtt actcttcttg cagaccaggt aaaaagattt 240
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catgatgttg aagaaaaacc tgagatcatc cctggagagc agggaatcat tgaggttgct 360
cgtcacccag atgcagttag tgtagtcaca ggaatagtag gctgtgcagg actgaagcca 420
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<210> 10
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<212> PRT
<213> Glycine max

<220>
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<222> (19)

<220>
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<222> (183)

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Pro Gly Xaa Ala Val Pro Glu Gln Gly Arg Lys Thr Trp Asp Gly Pro
             20                  25                  30

Lys Pro Ile Ser Ile Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr
         35                  40                  45

Leu Asp Ile Val Ala Glu Asn Pro Asp Lys Phe Lys Val Val Ala Leu
     50                  55                  60

Ala Ala Gly Ser Asn Val Thr Leu Leu Ala Asp Gln Val Lys Arg Phe
 65                  70                  75                  80

Lys Pro Gln Leu Val Ala Val Arg Asn Glu Ser Leu Ile Ala Glu Leu
                 85                  90                  95

Glu Glu Ala Leu His Asp Val Glu Glu Lys Pro Glu Ile Ile Pro Gly
            100                 105                 110

Glu Gln Gly Ile Ile Glu Val Ala Arg His Pro Asp Ala Val Ser Val
        115                 120                 125

Val Thr Gly Ile Val Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala
    130                 135                 140

Ile Glu Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile
145                 150                 155                 160

Ala Gly Gly Pro Leu Ser Pro Leu Ala Gln Lys His Asn Val Lys Ile
                165                 170                 175

Leu Pro Ala Asp Ser Asp Xaa Ser Ala Ile Phe Gln Cys Ile Gln Gly
            180                 185                 190

Leu Pro Glu Gly Ala Leu Arg Arg Val Ile Leu Thr Ala Ser Gly Gly
        195                 200                 205

Ala Phe Arg Gly Trp Pro Val
    210                 215
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<210> 11
<211> 642
<212> DNA
<213> Triticum aestivum

<220>
<221> unsure
<222> (506)

<220>
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<212> PRT
<213> Triticum aestivum

<400> 12
Met Gln Gln Gly Pro Pro Pro Ala Trp Pro Gly Arg Ala Val Val Glu
1 5 10 15

Pro Glu Arg Arg Ser Trp Glu Gly Pro Lys Pro Ile Ser Ile Val Gly
20 25 30

Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Asp Ile Val Ala Glu Asn
35 40 45

Leu Thr Ser Ser Arg Val Val Ala Leu Ala Ala Gly Ser Asn Val Thr
50 55 60

Pro Leu Ala Asp Lys Val Lys Thr Phe Lys Pro Asn Trp Val Val Leu
65 70 75 80

Arg Asn Asp Pro Leu Leu Asn Glu Leu Lys Glu Ala Leu Thr
85 90

<210> 13
<211> 360
<212> DNA
<213> Triticum aestivum

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<220>
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<220>
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<222> (313)

<220>
<221> unsure
<222> (338)

<220>
<221> unsure
<222> (352)

<400> 13
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tgggctcgct gacattcaaa gctcccgaca acgtgaaata cccatcggta gatctccgcc 180
gtacgcggca gggcgagccg ggggcaccat gacgggattt ttgagtgctg ctaatgagaa 240
ggcgtggagc ttgttcatcg acgaaaagat taactacctt ggacatcttc aaggngggng 300
agaatacctt ttnacgccaa ccgcaacaac tgggtganag ctcctcccca angggggggg 360

<210> 14
<211> 93
<212> PRT
<213> Triticum aestivum

<220>
<221> UNSURE
<222> (59)

<400> 14
Ser Val Leu Ala Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile Leu
1 5 10 15

Tyr Thr Leu Ser Trp Pro Asp Arg Val Tyr Cys Ser Glu Val Thr Trp
20 25 30

Pro Arg Leu Asp Leu Cys Lys Leu Gly Ser Leu Thr Phe Lys Ala Pro
35 40 45

Asp Asn Val Lys Tyr Pro Ser Val Asp Leu Xaa Xaa Tyr Ala Ala Gly
50 55 60

Arg Ala Gly Gly Thr Met Thr Gly Phe Leu Ser Ala Ala Asn Glu Lys
65 70 75 80

Ala Trp Ser Leu Phe Ile Asp Glu Lys Ile Asn Tyr Leu
85 90

<210> 15
<211> 1847
<212> DNA
<213> Zea mays

<220>
<221> unsure
<222> (5)..(9)

<400> 15
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ccctccctct ccccctcctc gcccagcggc aattaccaca gcctccccag caagccggga 180
tggctgcact caaggcatcg ttccggggtg agctcagcgc cgcttccttc ctcgactcca 240
gcaggggacc tctcgtccag cacaaagtgg attttacgtt tcaaaggaag ggcaaacgag 300
ctatttcact gagaaggaca tgctgttcta tgcaacaggc tccaccacca gcatggcctg 360
ggcgagctgt tgctgagcct ggccggaggt catgggatgg cccaaagcct atctcgattg 420
ttggttcaac tggttccata ggaacacaga cattggacat tgttgcggag aatcctgata 480
agttcagagt tgttgctctt gctgctggat ccaatgtcac gcttctagct gatcaggtca 540
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aagccttggc tgattgcgaa gagaagccag aaattattcc tggggagcaa ggtgtcatag 660
aagttgctcg ccatccagat gcagttacag ttgtcacagg gatagtaggt tgtgcagggc 720
tgaagcctac agttgctgca attgaagctg gtaaagacat agcattggca aacaaagaga 780
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tggacatatt caaggtggtg gagcttacat gtaacgcgca tcggaacgag ctggtaacaa 1500
gcccgtcact ggaggagatc gtccattacg atctgtgggc gaggagatat gcagccagtc 1560
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acagcaggag ttctaagata tgatgtgttt gtggctcctg tttccatgtt caattttcag 1680
gcctccacat gaataaaatg catctattcc atgtgatttc ttttatggat gaagtgtgcg 1740

aagtcgggtg ggaatcagat gcatcccttt cggtggagtt cttacgtagg gttgagcagc 1800
atttttaaa aaggtttttt tacctctgca aaaaaaaaaa aaaaaaa 1847

<210> 16
<211> 472
<212> PRT
<213> Zea mays

<400> 16

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Met Ala Ala Leu Lys Ala Ser Phe Arg Gly Glu Leu Ser Ala Ala Ser
  1               5                  10                  15

Phe Leu Asp Ser Ser Arg Gly Pro Leu Val Gln His Lys Val Asp Phe
            20                  25                  30

Thr Phe Gln Arg Lys Gly Lys Arg Ala Ile Ser Leu Arg Arg Thr Cys
        35                  40                  45

Cys Ser Met Gln Gln Ala Pro Pro Pro Ala Trp Pro Gly Arg Ala Val
    50                  55                  60

Ala Glu Pro Gly Arg Arg Ser Trp Asp Gly Pro Lys Pro Ile Ser Ile
65                  70                  75                  80

Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Asp Ile Val Ala
                85                  90                  95

Glu Asn Pro Asp Lys Phe Arg Val Val Ala Leu Ala Ala Gly Ser Asn
            100                 105                 110

Val Thr Leu Leu Ala Asp Gln Val Lys Thr Phe Lys Pro Lys Leu Val
        115                 120                 125

Ala Val Arg Asn Glu Ser Leu Val Asp Glu Leu Lys Glu Ala Leu Ala
    130                 135                 140

Asp Cys Glu Glu Lys Pro Glu Ile Ile Pro Gly Glu Gln Gly Val Ile
145                 150                 155                 160

Glu Val Ala Arg His Pro Asp Ala Val Thr Val Val Thr Gly Ile Val
                165                 170                 175

Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu Ala Gly Lys
            180                 185                 190

Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile Ala Gly Gly Pro Phe
        195                 200                 205

Val Leu Pro Leu Ala His Lys His Lys Val Lys Ile Leu Pro Ala Asp
    210                 215                 220

Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln Gly Leu Ser Glu Gly
225                 230                 235                 240

Ala Leu Arg Arg Ile Ile Leu Thr Ala Ser Gly Gly Ala Phe Arg Asp
                245                 250                 255

Trp Pro Val Asp Arg Leu Lys Asp Val Lys Val Ala Asp Ala Leu Lys
            260                 265                 270
```

```
His Pro Asn Trp Asn Met Gly Arg Lys Ile Thr Val Asp Ser Ala Thr
        275                 280                 285

Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala His Tyr Leu Phe Gly
    290                 295                 300

Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His Pro Gln Ser Ile Ile
305                 310                 315                 320

His Ser Met Val Glu Thr Gln Asp Ser Ser Val Leu Ala Gln Leu Gly
                325                 330                 335

Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr Leu Ser Trp Pro Asp
            340                 345                 350

Arg Ile Tyr Cys Ser Glu Val Thr Trp Pro Arg Leu Asp Leu Cys Lys
        355                 360                 365

Leu Gly Ser Leu Thr Phe Arg Ala Pro Asp Asn Val Lys Tyr Pro Ser
    370                 375                 380

Met Asp Leu Ala Tyr Ala Ala Gly Arg Ala Gly Gly Thr Met Thr Gly
385                 390                 395                 400

Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu Leu Phe Ile Asp Glu
                405                 410                 415

Lys Ile Ser Tyr Leu Asp Ile Phe Lys Val Val Glu Leu Thr Cys Asn
            420                 425                 430

Ala His Arg Asn Glu Leu Val Thr Ser Pro Ser Leu Glu Glu Ile Val
        435                 440                 445

His Tyr Asp Leu Trp Ala Arg Arg Tyr Ala Ala Ser Leu Gln Pro Ser
    450                 455                 460

Ser Gly Leu Ser Pro Val Pro Ala
465                 470
```

<210> 17
<211> 2019
<212> DNA
<213> Glycine max

<400> 17

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ttgggtttat gtgatgatgg ctctcaacat ctcttctcca gctgaagtca agtccatttt  120
tttcgctgat tccttcaagt ctaactgcct cacagcaaaa ttctcaggtg ggtttgcttt  180
taagagaaaa gagcgtagag cagcatctgg aggacgggtt tattgctcag tgcaggcaac  240
accaccacca ccagcctggc cgggacgagc ggttccggaa caaggtcgca agacttggga  300
tggaccaaaa cccatttcaa ttgtggggag tactggttca attggaactc agacactaga  360
tattgtggca gagaatccag ataagtttaa agttgtggca cttgcagctg gttcaaatgt  420
tactcttctt gcagaccagg taaaaagatt taagcctcaa cttgttgctg ttagaaatga  480
gtccctaatt gctgaacttg aagaggcctt gcatgatgtt gaagaaaaac ctgagatcat  540
ccctggagag cagggaatca ttgaggttgc tcgtcaccca gatgcagtta gtgtagtcac  600
aggaatagta ggctgtgcag gactgaagcc aacagttgca gcgatagaag cagggaaaga  660
catagctttg gccaacaaag agacattgat tgctggaggt ccttttgttc ttcctcttgc  720
tcagaagcat aatgtaaaaa tacttccagc tgattcagaa cattctgcca tctttcagtg  780
tatccagggg ttgccagagg gtgcacttag gagagttatt ttaactgcat ctggaggtgc  840
tttcagggat tggccagttg ataaactgaa agatgttaaa gttgctgatg cattaaaaca  900
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tcctaactgg aatatgggga aaaagataac tgtggactct gctacccttt ttaataaggg 960
tctagaagta attgaagcac attacttgtt tggagctgac tacgatcata ttgagattgt 1020
cattcatcca caatcaatca tacattcaat gattgaaaca caggattcat ctgttcttgc 1080
acaattgggg tggcctgata tgcgtttgcc aatcctctat acattatcat ggcctgacag 1140
gatttattgt tctgaagtca cttggccacg ccttgatctt tgcaagcttg gttcacttac 1200
atttaaaact ccagataatg taaagtatcc atccatgaat cttgcatttt ctgctggccg 1260
tgctggaggc acaatgacag gagttcttag tgcagcaaat gaaaaagctg tagagatgtt 1320
tattgatgaa aagataagct attggaattt attcaaagtt gtggagctaa catgtgagaa 1380
gcatcaaaat gaattggtat cctctccttc ccttgaggaa attattcact atgacctgtg 1440
ggcgcgaaaa tatgctgcta gtctgcaaga ctcttccagc ttcactccta ttcttgcatg 1500
aggatgatta aactagggat gtggctgatg cttcccaatt gcctgctttc accataattt 1560
cttcgggcat tgaacaatgt agaatggtgc attccacaga tgttgaaaat taaataggtt 1620
ttttgtttat ggaatgttgg tgttttaaca cctttcaatt gatcttatag ttttgtcgta 1680
atttcatgga aaacgatgtc tttttaatag tcaataggag cctaggaggt tggttggttg 1740
cctatgaatg tgtcaaagtc aagaagggga atggattttc tcatattcaa aatttacatg 1800
atgtggtcaa ctagaagttt tgtatttctc tttttctaat agaattaaat aggtggagtc 1860
ttacaaaaat taacagagat agacacaaaa gttgaccaat caccaatcac tttcataaaa 1920
ggattccttt tctttttcct cagcacacat tcgttggctg atattattat atgaaattgg 1980
tattatttgg atatcatagc taaaaaaaaa aaaaaaaaa 2019

<210> 18
<211> 475
<212> PRT
<213> Glycine max

<400> 18

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Met Met Ala Leu Asn Ile Ser Ser Pro Ala Glu Val Lys Ser Ile Phe
  1               5                  10                  15

Phe Ala Asp Ser Phe Lys Ser Asn Cys Leu Thr Ala Lys Phe Ser Gly
             20                  25                  30

Gly Phe Ala Phe Lys Arg Lys Glu Arg Arg Ala Ala Ser Gly Gly Arg
         35                  40                  45

Val Tyr Cys Ser Val Gln Ala Thr Pro Pro Pro Pro Ala Trp Pro Gly
     50                  55                  60

Arg Ala Val Pro Glu Gln Gly Arg Lys Thr Trp Asp Gly Pro Lys Pro
 65                  70                  75                  80

Ile Ser Ile Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Asp
                 85                  90                  95

Ile Val Ala Glu Asn Pro Asp Lys Phe Lys Val Val Ala Leu Ala Ala
            100                 105                 110

Gly Ser Asn Val Thr Leu Leu Ala Asp Gln Val Lys Arg Phe Lys Pro
        115                 120                 125

Gln Leu Val Ala Val Arg Asn Glu Ser Leu Ile Ala Glu Leu Glu Glu
    130                 135                 140

Ala Leu His Asp Val Glu Glu Lys Pro Glu Ile Ile Pro Gly Glu Gln
145                 150                 155                 160

Gly Ile Ile Glu Val Ala Arg His Pro Asp Ala Val Ser Val Val Thr
                165                 170                 175
```

Gly Ile Val Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu
180 185 190

Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile Ala Gly
195 200 205

Gly Pro Phe Val Leu Pro Leu Ala Gln Lys His Asn Val Lys Ile Leu
210 215 220

Pro Ala Asp Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln Gly Leu
225 230 235 240

Pro Glu Gly Ala Leu Arg Arg Val Ile Leu Thr Ala Ser Gly Gly Ala
245 250 255

Phe Arg Asp Trp Pro Val Asp Lys Leu Lys Asp Val Lys Val Ala Asp
260 265 270

Ala Leu Lys His Pro Asn Trp Asn Met Gly Lys Lys Ile Thr Val Asp
275 280 285

Ser Ala Thr Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala His Tyr
290 295 300

Leu Phe Gly Ala Asp Tyr Asp His Ile Glu Ile Val Ile His Pro Gln
305 310 315 320

Ser Ile Ile His Ser Met Ile Glu Thr Gln Asp Ser Ser Val Leu Ala
325 330 335

Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr Leu Ser
340 345 350

Trp Pro Asp Arg Ile Tyr Cys Ser Glu Val Thr Trp Pro Arg Leu Asp
355 360 365

Leu Cys Lys Leu Gly Ser Leu Thr Phe Lys Thr Pro Asp Asn Val Lys
370 375 380

Tyr Pro Ser Met Asn Leu Ala Phe Ser Ala Gly Arg Ala Gly Gly Thr
385 390 395 400

Met Thr Gly Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu Met Phe
405 410 415

Ile Asp Glu Lys Ile Ser Tyr Trp Asn Leu Phe Lys Val Val Glu Leu
420 425 430

Thr Cys Glu Lys His Gln Asn Glu Leu Val Ser Ser Pro Ser Leu Glu
435 440 445

Glu Ile Ile His Tyr Asp Leu Trp Ala Arg Lys Tyr Ala Ala Ser Leu
450 455 460

Gln Asp Ser Ser Ser Phe Thr Pro Ile Leu Ala
465 470 475

<210> 19
<211> 1640

<212> DNA
<213> Triticum aestivum

<400> 19
gcacgagctc cttctccctc ctcgagctct cctccggcac caccaggagc aggaggggag 60
ccgccttccg ccccccgccag caccagcgca aagtggactt gacgtttcaa aggagggaca 120
aaagagcagc ctacctgagg acatgctgct cgatgcagca gggcccaccg cccgcctggc 180
ctggccgagc cgtcgcggaa cccgagagga ggtcgtggga gggccccaag cccatctcga 240
tcgtcggctc aaccggttcc ataggaacac agacattgga catcgttgcg gagaatcctg 300
acaagttccg ggttgtcgct cttgctgctg gctccaatgt cactcttcta gctgatcagg 360
tgaaaacgtt caagccaaag ctggtggctg taagaaacga gtcattactt aacgagctaa 420
aggaagcgtt agctggttgt gaagaaatgc cggaaattat tcctggggag caaggtgtca 480
tagaggtcgc tcgccacccg gatgcagtta cagtcgttac gggcatagta gggtgtgcag 540
gactcaagcc tacagttgca gcaattgaag ctgggaaaga tattgcgttg gcgaacaaag 600
agacacttat cgcaggcggt ccgttcgtgc ttccccttgc gcacaagcac aatgtgaaaa 660
tacttcctgc tgattcagag cactctgcaa tatttcagtg tatacaaggc ttgtctgaag 720
gatcacttcg tcgcgttatt ctgactgcgt ctggcggtgc tttcagggac tggccagttg 780
agaagctgaa agatgtaaag gttgccgatg ctttgaagca cccaaactgg agcatgggga 840
agaaaatcac agtagattct gctactttgt tcaacaaggg gttagaagtt atcgaggcgc 900
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caaaaaaaaa aaaaaaaaaa 1640

<210> 20
<211> 473
<212> PRT
<213> Triticum aestivum

<400> 20
Thr Ser Ser Phe Ser Leu Leu Glu Leu Ser Ser Gly Thr Thr Arg Ser
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Arg Arg Gly Ala Ala Phe Arg Pro Arg Gln His Gln Arg Lys Val Asp
20 25 30

Leu Thr Phe Gln Arg Arg Asp Lys Arg Ala Ala Tyr Leu Arg Thr Cys
35 40 45

Cys Ser Met Gln Gln Gly Pro Pro Pro Ala Trp Pro Gly Arg Ala Val
50 55 60

Ala Glu Pro Glu Arg Arg Ser Trp Glu Gly Pro Lys Pro Ile Ser Ile
65 70 75 80

Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Asp Ile Val Ala
85 90 95

Glu Asn Pro Asp Lys Phe Arg Val Val Ala Leu Ala Ala Gly Ser Asn
100 105 110

Val Thr Leu Leu Ala Asp Gln Val Lys Thr Phe Lys Pro Lys Leu Val
115 120 125

Ala Val Arg Asn Glu Ser Leu Leu Asn Glu Leu Lys Glu Ala Leu Ala
130 135 140

Gly Cys Glu Glu Met Pro Glu Ile Ile Pro Gly Glu Gln Gly Val Ile
145 150 155 160

Glu Val Ala Arg His Pro Asp Ala Val Thr Val Val Thr Gly Ile Val
165 170 175

Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu Ala Gly Lys
180 185 190

Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile Ala Gly Gly Pro Phe
195 200 205

Val Leu Pro Leu Ala His Lys His Asn Val Lys Ile Leu Pro Ala Asp
210 215 220

Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln Gly Leu Ser Glu Gly
225 230 235 240

Ser Leu Arg Arg Val Ile Leu Thr Ala Ser Gly Gly Ala Phe Arg Asp
245 250 255

Trp Pro Val Glu Lys Leu Lys Asp Val Lys Val Ala Asp Ala Leu Lys
260 265 270

His Pro Asn Trp Ser Met Gly Lys Lys Ile Thr Val Asp Ser Ala Thr
275 280 285

Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala His Tyr Leu Phe Gly
290 295 300

Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His Pro Gln Ser Ile Ile
305 310 315 320

His Ser Met Ile Glu Thr Gln Asp Ser Ser Val Leu Ala Gln Leu Gly
325 330 335

Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr Leu Ser Trp Pro Asp
340 345 350

Arg Val Tyr Cys Ser Glu Val Thr Trp Pro Arg Leu Asp Leu Cys Lys
355 360 365

Leu Gly Ser Leu Thr Phe Lys Ala Pro Asp Asn Val Lys Tyr Pro Ser
370 375 380

Val Asp Leu Ala Tyr Ala Ala Gly Arg Ala Gly Gly Thr Met Thr Gly
385 390 395 400

Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu Leu Phe Ile Asp Glu
405 410 415

Lys Ile Ser Tyr Leu Asp Ile Phe Lys Val Val Glu Met Thr Cys Asp
420 425 430

```
Ala His Arg Asn Glu Leu Val Thr Arg Pro Ser Leu Glu Glu Ile Ile
        435                 440                 445

His Tyr Asp Gln Trp Ala Arg Lys Phe Ala Ala Asn Leu Gln Pro Ser
    450                 455                 460

Ser Ser Gly Arg Ser Pro Val Leu Ala
465                 470
```

<210> 21
<211> 406
<212> PRT
<213> Arabidopsis thaliana

<400> 21

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Ala Pro Arg Gln Ser Trp Asp Gly Pro Lys Pro Ile Ser Ile Val Gly
  1               5                  10                  15

Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu Asp Ile Val Ala Glu Asn
            20                  25                  30

Pro Asp Lys Phe Arg Val Val Ala Leu Ala Ala Gly Ser Asn Val Thr
        35                  40                  45

Leu Leu Ala Asp Gln Val Arg Arg Phe Lys Pro Ala Leu Val Ala Val
    50                  55                  60

Arg Asn Glu Ser Leu Ile Asn Glu Leu Lys Glu Ala Leu Ala Asp Leu
65                  70                  75                  80

Asp Tyr Lys Leu Glu Ile Ile Pro Gly Glu Gln Gly Val Ile Glu Val
                85                  90                  95

Ala Arg His Pro Glu Ala Val Thr Val Val Thr Gly Ile Val Gly Cys
            100                 105                 110

Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu Ala Gly Lys Asp Ile
        115                 120                 125

Ala Leu Ala Asn Lys Glu Thr Leu Ile Ala Gly Gly Pro Phe Val Leu
    130                 135                 140

Pro Leu Ala Asn Lys His Asn Val Lys Ile Leu Pro Ala Asp Ser Glu
145                 150                 155                 160

His Ser Ala Ile Phe Gln Cys Ile Gln Gly Leu Pro Glu Gly Ala Leu
                165                 170                 175

Arg Lys Ile Ile Leu Thr Ala Ser Gly Gly Ala Phe Arg Asp Trp Pro
            180                 185                 190

Val Glu Lys Leu Lys Glu Val Lys Val Ala Asp Ala Leu Lys His Pro
        195                 200                 205

Asn Trp Asn Met Gly Lys Lys Ile Thr Val Asp Ser Ala Thr Leu Phe
    210                 215                 220

Asn Lys Gly Leu Glu Val Ile Glu Ala His Tyr Leu Phe Gly Ala Glu
225                 230                 235                 240
```

```
Tyr Asp Asp Ile Glu Ile Val Ile His Pro Gln Ser Ile Ile His Ser
                245                 250                 255

Met Ile Glu Thr Gln Asp Ser Ser Val Leu Ala Gln Leu Gly Trp Pro
            260                 265                 270

Asp Met Arg Leu Pro Ile Leu Tyr Thr Met Ser Trp Pro Asp Arg Val
        275                 280                 285

Pro Cys Ser Glu Val Thr Trp Pro Arg Leu Asp Leu Cys Lys Leu Gly
    290                 295                 300

Ser Leu Thr Phe Lys Lys Pro Asp Asn Val Lys Tyr Pro Ser Met Asp
305                 310                 315                 320

Leu Ala Tyr Ala Ala Gly Arg Ala Gly Gly Thr Met Thr Gly Val Leu
                325                 330                 335

Ser Ala Ala Asn Glu Lys Ala Val Glu Met Phe Ile Asp Glu Lys Ile
            340                 345                 350

Ser Tyr Leu Asp Ile Phe Lys Val Val Glu Leu Thr Cys Asp Lys His
        355                 360                 365

Arg Asn Glu Leu Val Thr Ser Pro Ser Leu Glu Glu Ile Val His Tyr
    370                 375                 380

Asp Leu Trp Ala Arg Glu Tyr Ala Ala Asn Val Gln Leu Ser Ser Gly
385                 390                 395                 400

Ala Arg Pro Val His Ala
                405
```

<210> 22
<211> 475
<212> PRT
<213> Mentha x piperita

<400> 22

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Met Ala Leu Asn Leu Met Ala Pro Thr Glu Ile Lys Thr Leu Ser Phe
  1               5                  10                  15

Leu Asp Ser Ser Lys Ser Asn Tyr Asn Leu Asn Pro Leu Lys Phe Gln
            20                  25                  30

Gly Gly Phe Ala Phe Lys Arg Lys Asp Ser Arg Cys Thr Ala Ala Lys
        35                  40                  45

Arg Val His Cys Ser Ala Gln Ser Gln Ser Pro Pro Pro Ala Trp Pro
    50                  55                  60

Gly Arg Ala Phe Pro Glu Pro Gly Arg Met Thr Trp Glu Gly Pro Lys
65                  70                  75                  80

Pro Ile Ser Val Ile Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr Leu
                85                  90                  95

Asp Ile Val Ala Glu Asn Pro Asp Lys Phe Arg Ile Val Ala Leu Ala
            100                 105                 110
```

```
Ala Gly Ser Asn Val Thr Leu Leu Ala Asp Gln Lys Ala Phe Lys Pro
        115                 120                 125

Lys Leu Val Ser Val Lys Asp Glu Ser Leu Ile Ser Glu Leu Lys Glu
    130                 135                 140

Ala Leu Ala Gly Phe Glu Asp Met Pro Glu Ile Ile Pro Gly Glu Gln
145                 150                 155                 160

Gly Met Ile Glu Val Ala Arg His Pro Asp Ala Val Thr Val Val Thr
                165                 170                 175

Gly Ile Val Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala Ile Glu
            180                 185                 190

Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile Ala Gly
        195                 200                 205

Gly Pro Phe Val Leu Pro Leu Ala Lys Lys His Asn Val Lys Ile Leu
    210                 215                 220

Pro Ala Asp Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln Gly Leu
225                 230                 235                 240

Pro Glu Gly Ala Leu Arg Arg Ile Ile Leu Thr Ala Ser Gly Gly Ala
                245                 250                 255

Phe Arg Asp Leu Pro Val Glu Lys Leu Lys Glu Val Lys Val Ala Asp
            260                 265                 270

Ala Leu Lys His Ser Asn Trp Asn Met Gly Lys Lys Asn Thr Val Arg
        275                 280                 285

Leu Leu Gln Leu Phe Phe Asn Lys Gly Leu Glu Val Ile Lys Ala His
    290                 295                 300

Tyr Leu Phe Gly Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His Ser
305                 310                 315                 320

Pro Ser Ile Ile His Ser Met Val Glu Thr Gln Asp Ser Ser Val Leu
                325                 330                 335

Ala Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr Leu
            340                 345                 350

Ser Trp Pro Glu Arg Val Tyr Cys Ser Glu Ile Thr Trp Pro Arg Leu
        355                 360                 365

Asp Leu Cys Lys Val Asp Leu Pro Phe Lys Lys Pro Asp Asn Arg Glu
    370                 375                 380

Ile Pro Ala Met Asp Leu Ala Tyr Ala Ala Trp Lys Ser Arg Ser Thr
385                 390                 395                 400

Met Thr Gly Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu Met Phe
                405                 410                 415

Ile Asp Glu Lys Ile Gly Tyr Leu Asp Ile Phe Lys Val Val Glu Leu
            420                 425                 430
```

```
Thr Cys Asp Lys His Arg Ser Glu Met Ala Val Ser Pro Ser Leu Glu
        435                 440                 445

Glu Ile Val His Tyr Asp Gln Trp Ala Arg Asp Tyr Ala Ala Thr Val
    450                 455                 460

Leu Lys Ser Ala Gly Leu Ser Pro Ala Leu Val
465                 470                 475
```